

Program 3: Create a class Book which contains 4 members: name, author, price, num-pages. Include a constructor to set the values for the members. Include methods to set and get the details of the objects. Develop a Java program to create n book objects.

```
import java.util.*;
```

```
class Book
```

```
{
```

```
    String name;
```

```
    String author;
```

```
import java.util.*;
```

```
class Book {
```

```
private String name, author;
```

```
private double price;
```

```
private int numPages;
```

```
Book (String n, String a, double p, int num)
```

```
{
```

```
    name = n;
```

```
    author = a;
```

```
    price = p;
```

```
    pages = num;
```

```
}
```

```
void setName (String name)
```

```
{
```

```
    this.name = name;
```

```
{
```

```
String getName ()
```

```
{
```

```
    return name;
```

```
}
```

```
void setAuthor (String author)
```

```
{
```

```
    this.author = author;
```

```
{
```

```
String getAuthor ()
```

```
{
```

```
    return author;
```

```
{
```

```
void setPrice(double price)
```

```
{  
    this.price = price;  
}
```

```
double setP getPrice()
```

```
{  
    return price;  
}
```

```
void setPages(int pages)
```

```
{  
    this.pages = pages;  
}
```

```
int getPages()
```

```
{  
    return pages;  
}
```

```
String toString()
```

```
{  
    return (" Book Details : " + Name + "  
           " + Author + " " + Price + "  
           " + No. of pages);  
}
```

```
class BookTest {
```

```
public static void main(String args[]) {
```

```
Scanner scan = new Scanner(System.in);  
System.out.println(" Enter no. of books : ");  
int n = scan.nextInt();
```

```
Book ob[] = new Book[n];
```

```
for (int i = 0; i < n; i++) {
```

```
System.out.println(" Enter " + (i + 1) + " details : " + Name + " " + Author + " " + Price + " " + No. of pages);
```

```
String na = scan.nextLine();
```

```
String au = scan.nextLine();
```

```
double p = scan.nextDouble();
```

```
int num = scan.nextInt();
```

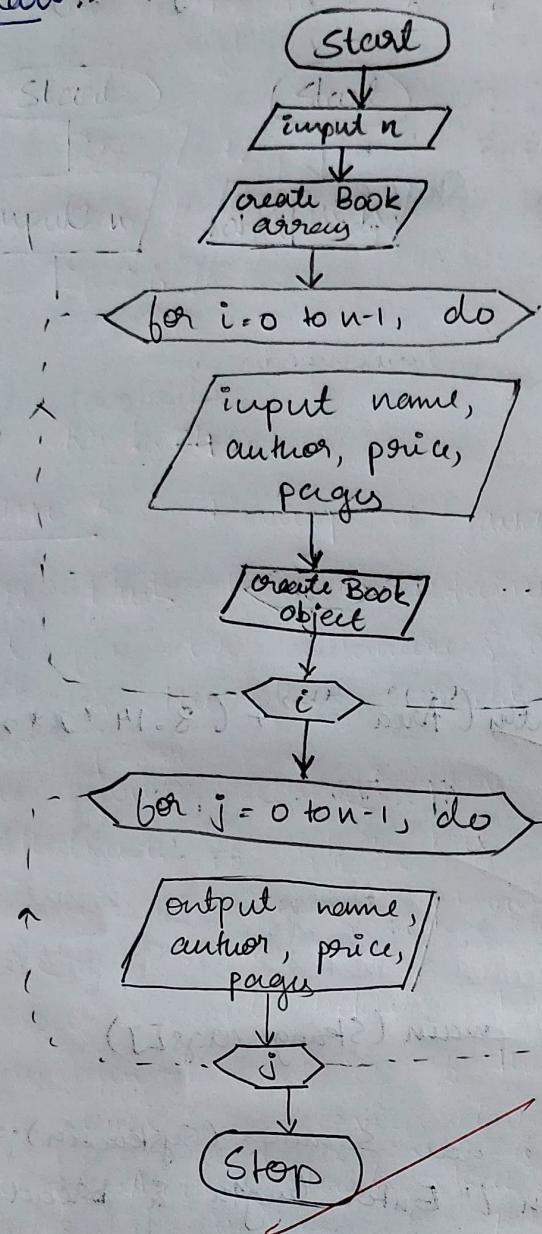
```
ob[i] = new Book(na, au, p, num);
```

```
for (int i = 0; i < n; i++) {
```

```
System.out.println(ob[i].toString());
```

Program 3 :-

Flowchart:-



Output:

Enter no. of books: 2
Enter 1 book details:
Name: The Great Gatsby
Author: F. Scott
Price: 700
No. of pages: 180

Enter 2 book details:
Name: Pride & Prejudice
Author: Jane Austin
Price: 1050
No. of pages: 400

Algorithm:

- Step 1 : Start
- Step 2 : input n
- Step 3 : create Book array
- Step 4 : for i = 0 to n-1, do
 - input name, author, price, pages
 - create Book object
- Step 5 : endfor
 - for j = 0 to n-1, do
 - output name, author, price, pages
- Step 6 : endfor
- Step 7 : Stop

C:\Users\BMSCE\Desktop\014>javac Book.java

C:\Users\BMSCE\Desktop\014>java Book

enter the number of books

2

Enter name

The Great Gatsby

Enter Author

F Scott

Enter Price

700

Enter Number of pages

180

Enter name

Pride and Prejudice

Enter Author

Jane Austen

Enter Price

1050

Enter Number of pages

400

THE BOOK LIBRARY

Name of book: The Great Gatsby

Name of author: F Scott

Price of book: 700

number of pages of book: 180

Name of book: Pride and Prejudice

Name of author: Jane Austen

Price of book: 1050

number of pages of book: 400

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Program 4: WAP to create an abstract class named shape that contains two integers & an empty method named printArea(). Provide three classes named rectangle, triangle & circle such that each answer of the class extends to class shape. Each answer of the classes contains only one method printArea() that prints the area of given shape.

import java.util.*;
abstract class Shape

{
int n;
int y;
abstract void printArea();

class Rectangle extends Shape

{
+ ~~Rectangle~~ printArea (int l, int b)

n = l; y = b;

System.out.println ("Area = " + (n * y));

void printArea()

{

System.out.println ("Area = " + (l * b));

{

class Triangle extends Shape

{
Triangle (int l, int n)

n = l;

y = n;

void printArea()

```
System.out.println ("Area = " + ((x+y)/2));
```

```
class Circle extends Shape
```

```
Circle()
```

```
{
```

```
n = r;
```

```
}
```

```
void printArea()
```

```
{
```

```
System.out.println ("Area = " + (3.14*x*n));
```

```
}
```

```
class main ShapeTest
```

```
{
```

```
public static void main (String args[])
```

```
{
```

```
Scanner scan = new Scanner (System.in);
```

```
System.out.println ("Enter length & breadth");
```

```
int a = scan.nextInt();
```

```
int b = scan.nextInt();
```

```
Shape A = new Rectangle (a, b);
```

```
Shape B = new Triangle (a, b);
```

```
System.out.println ("Enter radius");
```

```
int r = scan.nextInt();
```

```
Shape C = new Circle (r);
```

```
{
```

```
A.printArea();
```

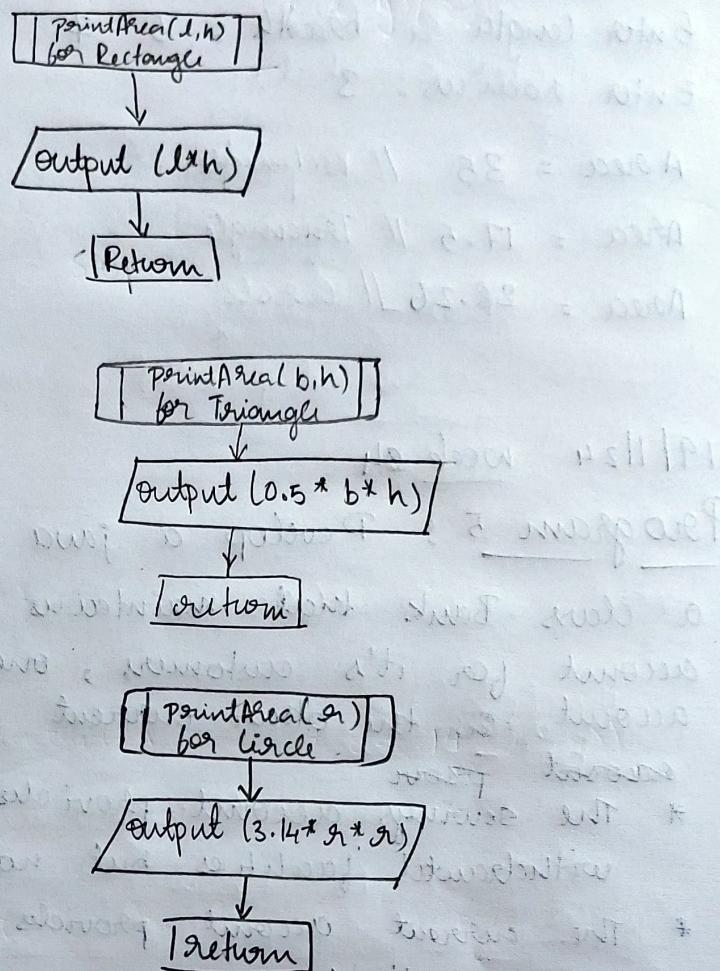
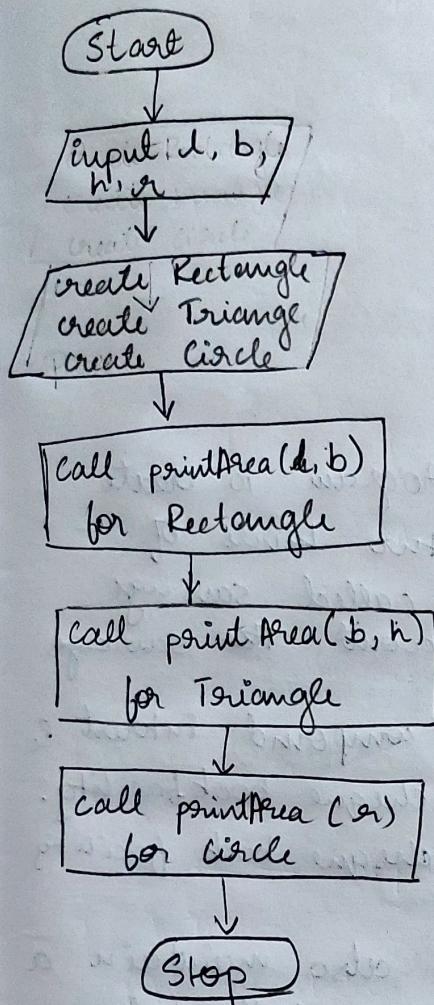
```
B.printArea();
```

```
C.printArea();
```

```
}
```

Program 4 :-

Flowchart :-



Algorithm :-

- Step 1 : Start
- Step 2 : Input l, b, h, r
- Step 3 : call $\text{printArea}(l, b)$ for Rectangle
- Step 4 : create Rectangle
- Step 5 : create Triangle
- Step 6 : create Circle
- Step 7 : call $\text{printArea}(l, b)$ for Rectangle
- Step 8 : call $\text{printArea}(b, h)$ for Triangle
- Step 9 : call $\text{printArea}(r)$ for Circle
- Step 10 : Stop

- $\text{printArea}(l, b)$ for Rectangle
- Step 1: Output ($l * b$)
 - Step 2: Return
- $\text{printArea}(b, h)$ for Triangle
- Step 1: Output ($0.5 * b * h$)
 - Step 2: Return
- $\text{printArea}(r)$ for Circle
- Step 1: Output ($3.14 * r * r$)
 - Step 2: Return

Output:-

Enter length & breadth : 5 7

Enter radius : 3

Area = 35 // Rectangle

Area = 17.5 // Triangle

Area = 28.26 // circle

C:\Users\BMSCE\Desktop\014>javac ShapeTest.java

C:\Users\BMSCE\Desktop\014>java ShapeTest

Enter length and breadth of rectangle:

5 7

Rectangle Area is 35

Enter length and height of triangle:

5 7

Triangle Area is 17.5

Enter radius:

3

Circle Area is 28.259999999999998

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